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ABSTRACT

The objective of the study was to determine whether Competency-Based Testing (CBT) schools altered their curriculum differently than Non-Competency-Based Testing schools (NCBT), and, if so, what selected factors were identified as contributing to the differences among the responses secondary schools made to CBT. The data from 410 member high schools of the North Central Association of Colleges and Schools were collected from "Form A: Annual Report, North Central Association of Colleges and Schools" and a researcher-developed questionnaire. The questionnaire was returned by 85 percent of the principals of schools surveyed. The chi-square test of association applied at the .10 level of significance was utilized to test for significant association between competency-based and non-competency-based testing alone; then high schools isolated first by community type, then school size, and then ethnic makeup. Among the conclusions reached from the study were: CBT schools were doing little significantly different than NCBT schools; CBT schools stressed "basic" courses and remedial courses more than NCBT schools; and in an effort to address the narrowing of the curriculum, schools were adjusting courses by combining them, offering them in single sections or at alternate times, or changing their internal structure. (PN)

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SUBJECT CURRICULUM MODIFICATIONS OCCURRING IN STABLE ENROLLMENT COMPETENCY-BASED TESTING AND NON-COMPETENCY-BASED TESTING PUBLIC SENIOR HIGH SCHOOLS BETWEEN THE SCHOOL YEARS 1974-75 and 1978-79

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Statement of the Problem

The problem of this study was, "Did Competency-Based Testing schools alter their curriculum differently than Non-Competency-Based Testing schools, and, if so, what selected factors were identified as contributing to the differences among the responses secondary schools made to Competency-Based Testing?" There were several sub-problems and hypotheses identified in the study. The following are the 17 sub-problems used in the study.

1. Was there a difference in the number of credits offered?
2. Was there a difference in the graduation requirements?
3. Was there a difference in the number of courses dropped which were not remedial, summer school, night school, independent study, or advanced placement?
4. Was there a difference in the number of courses added which were not remedial, summer school, night school, independent study, or advanced placement?
5. Was there a difference in the number of remedial courses offered?
6. Was there a difference in the number of advanced placement courses offered?
7. Was there a difference in the number of independent study courses offered?
8. Was there a difference in the number of summer school courses offered which were not remedial, advanced placement, or independent study?
9. Was there a difference in the number of night school courses offered which were not remedial, advanced placement, or independent study?
10. Was there a difference in the number of courses which had changed in duration?
11. Was there a difference in the number of courses which had combined with another course or separated into two courses?
12. Was there a difference in the number of courses that, while retaining the same title and length, had substantially changed in content, organization, or instructional approach?

13. Was there a difference in the number of sequences of courses?

14. Was there a difference in the number of courses offered only in alternate years or semesters or in one section?

15. Was there a difference in average and minimum class size?

16. Was there a difference in student enrollment data?

17. Was there a difference in staffing?

There were 37 null hypotheses framed to delineate more specifically the issues raised by the sub-problems. The null hypotheses reflected not only a difference between the Competency-Based Testing and Non-Competency-Based Testing schools, but a difference in the reported changes from one school year to one five years later. (The hypotheses are to be found in Appendix C.)

Limiting Factors

Competency-Based Testing is an educational movement with not only national impact, but broad interpretation and many facets. This study intended to focus not upon the total effect of the movement, but rather upon certain selected and specified outcomes delimited by the following factors.

1. This study was concerned only with the subject curriculum, the classes taught and officially recognized on a student's transcript. No effort was made to consider co-curricular classes or any other means by which a student might acquire a formal education. Neither was any part of the informal educational process considered as in the domain of this study. Teacher and student data gathered were sought only as they reflected on subject curriculum modifications. Budget, administrative policy, teacher preparation, funding, and implementation procedures were not considered.

2. The focus of this was on the individual school building; hence, no effort was made to study district activity in the Competency-Based Testing process. Also, this study was not concerned with the sources of the Competency-Based Testing thrust, whether it was state, district, community, or parent pressure.

3. This study was not concerned with the type of competency test used or any other characteristics specifically related to

testing. Schools were not grouped by any degree of Competency-Based Testing or the lack thereof, but merely by their response affirmatively or negatively to a question about whether they had a Competency-Based Testing program.

4. Schools with either increasing or declining enrollments were not considered in the study.

5. Public senior high schools of either three years or four years were the specific providence of this study. Private high schools, separate technical or vocational schools, junior high/middle schools, and elementary schools were not studied.

6. This study was concerned with senior high schools which were members of the North Central Association of Colleges and Schools and were members during the interval being studied.

7. To avoid possible curricular differences because of the size of school, this study compared schools within the three recognized classes of high schools of the North Central Association: zero to 499, 500 to 1,499, and 1,500 or more.

8. This study concerned itself with the school years 1974-75 and 1978-79. All questions pertained to conditions present during those two school years and their comparison.

Definition of Terms

The following terms were used in the statement of the problem, the sub-problems, and the hypotheses.

Competency-Based Testing (CBT). One or more tests or other forms of evaluation to be taken once or more during a student's education, usually in senior high school, to determine whether a student has achieved a certain minimal level of performance on some specified skill(s) deemed to be basic or necessary for success as an adult by teachers, parents, students, and the community. Failure to pass the test(s) may result in diploma denial or issuance of a certificate of attendance or some sub-standard diploma. Failure can usually be prevented by remediation or by retaking the test(s).

Curriculum. The word curriculum as used in this study is the subject curriculum--the courses and their structure and content

that are used for formal content instruction within the normal school day.

Graduation Requirements. "Specifications of minimum educational achievement and other qualifications necessary for the granting of a specified degree by an institution's governing boards; stated generally in terms of semester or quarter hours, sometimes in terms of units or cerdits in certain subject-matter fields, semesters or quarters of residence, or minimum grades, work, or mastery, or, in some colleges, in terms of comprehensive examinations covering major areas of study." (Good, 1973, p. 264)

Pupil-Classroom Teacher Ratio. "The number of pupils in membership as of a given date, divided by the number representing the total full-time equivalency of classroom teaching assignments serving these pupils on the same date." (Good, 1973, p. 470)

Research Design

The research design answered the following questions. How were the schools surveyed chosen? How were the data gathered about the specific areas of curriculum changed? What were the statistical procedures used to analyze the data?

School Cases. Schools selected for this study were based on the following criteria:

1. The schools chosen were members of the North Central Association of Colleges and Schools and were for the school years 1974-75, 1975-76, 1976-77, 1977-78, and 1978-79 as determined by their inclusion in the North Central Association Quarterly, Volumes 50, 51, 52, 53, and 54.

2. The schools were public high schools, and did not fall under any of the categories of private, independent college preparatory schools, or vocational/occupational secondary schools in the volume of the North Central Association Quarterly used.

3. Each school had the same grade organization of three or four years for the period of time being studied. No schools were chosen that had any other number of grade designations than three or four.

4. The schools selected exhibited neither increasing enrollment greater than 15% nor declining enrollment greater than 5% between 1974-75 and 1978-79. Schools which had enrollment increases more than 15% or decreases more than 5% or which had year-to-year fluctuations greater than these percentages were rejected. There were 1,786 schools meeting these criteria.

Collection of the Data. Data for this study came from two sources, Form A, of the Annual Report, North Central Association of Colleges and Schools (Appendix A), and a researcher-developed questionnaire, Curriculum Survey.

Form A, Annual Report, North Central Association of Colleges and Schools is submitted to the chairmen of the member states by November 1 of each year. Following the annual spring meeting, these reports are bound or microfilmed by each state office. Copies of the front page of Form A, Annual Report, for the school years 1974-75 and 1978-79 were requested from each state office for each evaluated school. Each state chairperson received an envelope containing an introductory cover letter from the Executive Director of the North Central Association of Colleges and Schools, a letter from the researcher explaining the purpose of the research and requesting the data, a check to cover the expenses of duplication, and a self-addressed, stamped envelope.

From these reports, the following data were secured, if available, for each school for the 1974-75 and 1978-79 school years.

1. The number of units of credit in each of the following subjects being offered and taught in the school for the school year of that report: language arts, science, mathematics, social studies, foreign languages, art, music, humanities, practical arts, health and physical education, others, and total.
2. The number of units of credit in grades nine through twelve required for graduation.
3. The pupil-professional staff full-time equivalency.
4. The pupil-librarian full-time equivalency.
5. The pupil-media specialist full-time equivalency.
6. The pupil-classroom teacher full-time equivalency.

7. The pupil-guidance and counseling full-time equivalency.
8. The pupil-principal full-time equivalency.
9. The pupil-assistant or vice-principal full-time equivalency.
10. The pupil-administrative assistants full-time equivalency.
11. The public, non-public designation.
12. The pupil membership.

A cross-check on public, non-public designation and on pupil membership was made from this form to the published reports on which the selection criteria were based and to the responses made by the principals on the Curriculum Survey. These collected data from Form A were used to test Hypotheses 1-12 and 32-37.

The second source of data from each identified school was the researcher-developed questionnaire (see Appendix B). The first portion of the questionnaire was the Curriculum Survey, General Information. Its intent was to gather information from the school administrator not mentioned on Form A which was necessary to complete the testing of the hypotheses. It provided the following data:

1. The type of community from which the majority of the school's students come.
2. The ethnic makeup of the school's student body in 1978-79 and the percentages in 1974-75 if changed.
3. The occupational categories found in the school's attendance area in 1978-79 and the percentages in 1974-75 if changed.
4. If the school (or state/district) required a minimal competency test for graduation in either 1974-75 or 1978-79 or both.
5. The public or private/parochial/vocational designation of the school.
6. The total enrollment for 1974-75 and 1978-79.

This General Information questionnaire, a cover letter from Dr. John W. Vaughn requesting the principal's help and certifying the support of the North Central Association, a letter from the researcher explaining the questionnaire, assuring anonymity, and requesting the principal's assistance, and a self-addressed, stamped envelope were sent to the 1,786 schools meeting the initial selection criteria. There were 1,482 schools (82.98%) which replied, of which 190 were CBT schools.

A month after the first questionnaire was sent, a stratified random drawing on school size was made from the returned forms for mailing of the main body of the questionnaire. This mailing included a cover letter again requesting support, explaining the questionnaire, reverifying approval and support of the North Central Association, and a reassuring anonymity. It also included a copy of the Curriculum Survey instrument and a self-addressed, stamped envelope.

This questionnaire provided the following data:

1. The change in the credits required for graduation by subject area and in total.
2. The change in the number of courses dropped in each of the subject areas and in total excluding remedial, advanced placement, night school, summer school, or independent study courses.
3. The change in the number of courses added in each of the subject areas and in total, excluding remedial, advanced placement, night school, summer school, or independent study courses.
4. The change in the number of remedial courses in summer school, night school, and in the subject areas and in total.
5. The change in the number of advanced placement courses in summer school, night school, in the subject areas, and in total.
6. The change in the number of independent study courses in summer school, night school, in the subject areas, and in total.
7. The change in the number of summer school courses in the subject areas and in total, excluding remedial, advanced placement, and independent study courses.
8. The change in the number of night school courses in the subject areas and in total, excluding remedial, advanced placement, and independent study courses.
9. The change in the number of courses extended in length.
10. The change in the number of courses reduced in length.
11. The change in the number of courses combined with another course(s) to make one single course.
12. The change in the number of courses separated into two or more discrete courses.
13. The change in the number of courses that, while retaining

the same title and length, substantially changed in content, organization, or instructional approach.

14. The change in the number of curriculum tracks.

15. The change in the number of courses offered only in alternate semesters.

16. The change in the number of courses offered only in alternate years.

17. The change in the number of courses offered only in one section.

18. The change in the average class size.

19. The change in the minimum class size.

20. The change in the number of classes taken per student per year.

21. The change in the number of classes taken per student per year by subject area.

22. The change in the number of full-time equivalency teachers in the subject areas and in total.

These data were used to test Hypotheses 13-31.

The questionnaire was structured so that for each change, a line of abbreviations was given from which the respondent was to circle one. The abbreviations, I, SI, NC, SD, D, and NA, represented the selected possible types of change from 1974-75 to 1978-79, Increased, Slightly Increased, No Change, Slightly Decreased, Decreased, and Not Applicable. The questionnaire asked only for the principal's perceptions, and not actual numbers, and gave appropriate directions.

Validation of Questionnaire. After the questionnaire was constructed, it was evaluated for appropriateness and clarity by the Executive Director of the North Central Association of Colleges and Schools. That also informed him of the direction of the study and allowed him to make any alterations, not only about the instrument, but about the appropriateness of the study as reflected in the questionnaire to his organization.

While the cover letter was being composed, a second revision incorporating his suggestions was submitted to the Associate to the Vicar for Catholic Education, the Director of Catholic School

Services, and Superintendent of Schools of the Archdiocese of Denver Catholic Schools for evaluation. A third draft utilizing their corrections was submitted to two classes of graduate students in the School of Education, University of Colorado, for their evaluation.

The questionnaire was then submitted to a research consultant for layout and design of the computer program and keypunch design. After layout, it was resubmitted to the North Central Executive Director for his final approval. Finally, it was presented to a jury of three university professors from the University of Colorado who were recognized as having experience in the evaluation of such questionnaires, who were familiar with the North Central Association, and who knew the requirements of a study to be undertaken utilizing member schools.

This constituted the validation of the instrument to assure that the questions were appropriate and that the questionnaire was likely to yield accurate responses.

Returns. A month after mailing the questionnaire, a second mailing was made to all non-respondent principals. It contained a modified letter, a second copy of the questionnaire, and another self-addressed, stamped envelope. In another two weeks a third mailing was sent containing the same modified cover letter, a third copy of the questionnaire, and another self-addressed, stamped envelope. On June 1, 1980, the limit for returns was set, and the individual state North Central offices sent the list of respondents in their states.

From the 1,482 schools that replied to the first questionnaire, a stratified random sampling based on school size was performed. The number of CBT schools in each school size was multiplied by four and that many NCBT schools were drawn. In some school-size groups, the multiplication by four was equal to or larger than the total number of NCBT schools, so all NCBT schools in that category were used. This drawing resulted in the selection of 565 schools to be sent the questionnaire. Of the 565 schools sent questionnaires, 410 responded (72.57%), of which 144 were CBT schools (75.78% of the CBT schools responded). Seventy-two schools replied after the

deadline, raising the total to 482 (84.95%, of which 17 were CBT schools).

Statistical Procedures Used to Analyze the Data. The statistical analysis of the data was organized in this fashion:

1. The 37 null hypotheses were tested and either held tenable or rejected. (See Appendix C.)

2. The testing of the hypotheses provided answers to the questions associated with each of the sub-problems. If the null hypothesis was rejected, then the question was answered affirmatively.

3. The answers to the questions, in turn, proved or disproved the 17 sub-problems of the study.

4. The verification of the sub-problems furnished evidence of proof of the major problem of the study, "Did CBT schools alter their curriculum differently than non-CBT schools, and, if so, what selected factors were identified as contributing to the differences among the responses secondary schools made to CBT?"

Once the data were collected from Form A and the two portions of the questionnaires for each school, the information was coded and transferred to computer cards. All information on each school from the three data sources was organized into eight cards per school and considered as a case. The cards were then processed by the researcher at the University of Colorado Computing Center using the Statistical Package for the Social Sciences (SPSS) program, version 7.5, to analyze the data. There were 11,880 chi-square tests run.

Each of the 37 hypotheses was tested at the .10 level of significance. This level was chosen to increase the probability of existing relationships emerging, and to indicate trends rather than a high degree of correlation. All hypotheses were analyzed using the chi-square test of association. The SPSS program which computes chi-square is sub-program "crosstabs" of the program "contingency tables and related measures of association." Since Hypotheses 31-37 utilized actual numbers rather than scaled opinions, it was necessary to perform some intermediate calculation before chi-square analysis could be executed. Utilizing the "if" and "compute" functions, the numbers and ratios from Form A were changed into Increase, No Change, and Decrease to match the questionnaire data. If any null hypothesis

was rejected with the probability of less than .10, it was concluded that there was some association between variables in that contingency table.

Also analyzed were the major trends occurring in the study. These were viewed in two separate ways. The first type of major trend was any chi-square analysis that while not significant was less than .20. Those analyses were reported as major trends. The second type of major trend reported was that which found both types of schools (CBT and NCBT) favoring one response (increase or decrease) more than the other by 10% or greater. These trends were generally viewed, not by individual cell, but across an entire table ("the trend was to report increases in graduation requirements") or a selected section or selected types of courses within a table ("the trend was to offer summer school courses only in the 'basic' subjects"). Exceptions to trends were also noted ("the trend was to report increases in credits offered except in foreign language and humanities"). Some exceptions to the 10% limit were allowed in the larger groupings (entire tables and selected sections or selected types of courses). When this was done, it became apparent that the whole grouping was obviously going one direction, but that certain cells were not greater than 10% by a small amount.

All chi-square analyses were performed on all variables in the same manner. The rows found in the contingency table indicated the schools' status on CBT, either having a competency test in 1974-75 or 1978-79 or both (CBT), or having no competency test during either year (NCBT). It was initially expected that those schools having CBT in 1974-75 could be compared to those which had undertaken CBT by 1978-79, but the small number of schools having CBT in 1974-75 mitigated against that type of analysis, hence, the creation of the either/or category.

The columns in the contingency tables indicated the schools' responses to each individual question on the Curriculum Survey. Initial analysis included all responses excluding the Not Applicable column. That gave five columns: Increase, Slight Increase, No Change, Slight Decrease, and Decrease. The first set of analyses was performed on each question with the separation only by CBT or

NCBT to establish the impact of CBT alone. Then, using the "recode" function of the SPSS package, the columns Increase and Slight Increase, and Slight Decrease and Decrease were combined to produce a two-by-three contingency table, instead of a two-by-five contingency table, indicating Increase, No Change, and Decrease. This compression of the table was performed for several reasons. First, it allowed for the elimination of the small cell size problem in certain situations, including the blank cell, which creates certain statistical irregularities. Second, it allowed analysis of the larger trend rather than the differences between the slight changes and the larger Increase or Decrease. Third, in many cases it enhanced the probability of significant differences actually present of appearing. The third analysis of the data was performed, again using the "recode" function, but this time making either Increase and Slight Increase or Slight Decrease and Decrease equal to zero. This function allowed for the comparisons of either increases or decreases alone. This computation was performed only when analysis of one of the first two contingency tables revealed a potential significant difference in Increases or Decreases that were hampered by such things as small cell size on its opposite response, or insignificant response on that opposite response.

After these analyses were performed on CBT/NCBT alone, the "select if" function of the SPSS package was utilized. Here the researcher computed the chi-square contingency tables on the various responses to the questionnaire by the ethnic makeup of the school, the community type, and the enrollment category, all found on the General Information portion of the Curriculum Survey. Analysis was not performed utilizing occupational categories because actual percentage differences between the array of occupations reported in one community versus another was too small to accurately discriminate between types of community. The differences in percentages of reported occupations between all communities was less than 5% in most situations. The result was that greater than 50% of all schools surveyed reported nearly identical percentages of the surveyed occupations.

Following the same procedures as were performed on the CBT/NCBT schools alone, schools were selected only if they fell into certain ethnic, community type, or enrollment categories. Complete chi-square analyses on all questions were performed on all three enrollment categories, small, medium, and large separately. Complete chi-square analyses of all questions were performed on all seven community types, Inner City, Rest of Big City, Suburban Fringe, Affluent Suburb, Medium City, Small City, and Rural. Complete chi-square analyses of all questions were performed on both types of ethnic makeup, Primarily Anglo (65% or greater) and Primarily Minority (65% or greater of any minority or combination of minorities).

Initial analysis intended to isolate ethnic makeup by the individual categories seen on the General Information questionnaire, Anglo, Black, Hispanic, Asian, Native American, and Other, but again, small cell size prevented a statistically valid analysis, so the ethnic categories were grouped into Primarily Anglo and Primarily Minority.

The "recode" function was also used to group community types. Certain community types were found to have few respondents, so Inner City was combined with Rest of Big City, Suburban Fringe was combined with Affluent Suburb, and Small City was combined with Rural, making four categories instead of seven, Urban, Suburban, Medium City, and Rural. Again, all forms of analysis were performed, full-scale Increase through Decrease, Increases and Decreases combined, Increases isolated, and Decreases isolated.

Hypotheses 31-37 were also tested using chi-square. Using "if" statements and "compute" statements, the values given on Form A for 1974-75 staff positions were subtracted from values given on Form A for 1978-79. If the remainder was positive, it was coded as an increase, and if it was negative, it was coded as a decrease. If there was no change it was recorded as no change, giving a chi-square table like the compressed contingency tables on Hypotheses 1-30. The same calculations were performed after the total student enrollment figure was divided by each staff position to yield a ratio. "If" and "compute" statements were made, and then chi-square performed.

As a final check, the numbers and ratios pupil-classroom teacher full-time equivalency, pupil-teacher ratio, and total graduation requirements were analyzed using "Spearman correlation" to check the correlation between what the administrators reported to North Central and what they responded on the questionnaire to Questions 22.2, 18, and 1.1.

Validity Checks. As a check of the validity of the instrument, several items were compared. The first was a verification of enrollment numbers and the public/private/vocational status. Data from the first portion of the questionnaire were compared with the information on Form A of the Annual Report. Any questionnaire that did not match the Form A data was rejected. This check was performed before schools were selected for mailing of the main portion of the questionnaire.

The second validity check concerned the total graduation requirements. The response of each principal to Question 1.1; the perception of the credits required for graduation in grades 9-12, total, was correlated with the actual increase, decrease, or no change in graduation requirements from Form A between 1974-75 and 1978-79 utilizing the Spearman correlation. If the Spearman test proved significant, then there was a difference between the actual and reported change in total credits required for graduation.

The third validity check was to compare the actual difference in pupil-teacher ratios between 1974-75 and 1978-79 with the principals' responses to Question 18, the average class size. If the Spearman test proved significant, then there was a difference between actual and reported changes in pupil-teacher ratios or average class size.

The fourth validity check concerned total full-time equivalency teachers. The response of each principal to Question 22.1, the perception of the full-time equivalency teachers, total, was correlated with the actual increase, decrease, or no change in full-time equivalency teachers from Form A between 1974-75 and 1978-79 utilizing the Spearman correlation. If the Spearman test proved significant, then there was a difference between the actual and reported change in total full-time equivalency teachers. If the validity

checks proved significant, then the instrument was declared invalid. There were none declared invalid.

Analysis of Data

The data were analyzed under the four basic factors: competency-based testing, community type, enrollment group, and ethnic makeup. The chi-square test was run for all 37 hypotheses for each of these four factors. The results of the chi-square tests were organized under the appropriate sub-problems, and finding statements were made for each sub-problem. The findings were organized into Significant Findings and Major Trends under each of the four factors.

Competency-Based Testing. The primary concern of the research was an analysis of the impact of Competency-Based Testing (CBT) on the curriculum compared to the natural progression of the curriculum in Non-Competency-Based Testing (NCBT) public senior high schools of stable enrollment. As a consequence, this analysis was devoted entirely to that analysis with no regard for any other impinging factors, such as school size. There were chi-square tests run for each of the 17 hypotheses under this factor.

Community Type. The General Information portion of the questionnaire was designed to provide certain demographic information about the respondent schools. The first of these was community type. Categories were taken from the 1972 National Assessment of Education Progress Report, which allowed a full view of the types of communities identified. Upon analysis of the data, however, it was found that several types of communities had insufficient sampling to be validly analyzed. These groups, Inner City, Rest of Big City, Suburban Fringe, and Affluent Suburb had response frequencies of 25, 33, 40, and 35 respectively. It was decided that for any worthwhile analysis to be done on the community types, combining community types was necessary. Fortunately, the community types, Inner City and Rest of Big City, combined to form Urban, Suburban Fringe combined with Affluent Suburb to form Suburban, and Small City and Rural combined to form Rural. While small cell sizes did not dictate the combining of these last two, it was believed that two groups

devoted entirely to the small city/rural areas would be weighing the overall analysis community type too much in favor of the small city/rural schools. The remaining area, Medium City, could not be combined, and so was left intact; hence, the community types were Urban, Suburban, Medium City, and Rural.

Enrollment Group. Enrollment Group, or school size, was the second factor under which the data were analyzed. The three groups recognized by the North Central Association of Colleges and Schools were: Small Schools, 0-499; Medium Schools, 500-1,499; and Large Schools, 1,500 and above. These were the enrollment groups used in this analysis--small, medium, and large.

Ethnic Makeup. Ethnic makeup was analyzed using two categories, anglo and minority. These categories were arrived at from the ethnic makeup section of the first portion of the questionnaire. Originally, it was expected that a sufficiently large sample of schools would be contacted and that the analysis could be performed using predominantly black, hispanic, and white American schools as well as anglo. This was not to be the case. There were too few respondent schools which reported that a majority of their student body was any one of the identified ethnic groups. Schools were then regrouped into classes, anglo for any school with 65% or more of its student population anglo, and minority for any school with any minority or combination of minorities greater than or equal to 65%. Even with this regrouping there were 331 anglo schools and only 77 minority schools. Two schools indicated no ethnic makeup categories.

Summary of Findings

The summary of findings is organized into 17 sections formed by the sub-problems of the study.

Sub-problem 1, "Was there a difference in the number of credits offered?" had the following findings related to it.

Medium-sized CBT schools reported a significant difference in language arts and health and physical education credits offered. They reported more increases and fewer decreases. Minority CBT schools reported a significant difference in social studies credits offered, again more increases and fewer decreases.

Sub-problem 2, "Was there a difference in the graduation requirements?" had the following findings related to it.

CBT schools, anglo CBT schools, suburban CBT schools, and medium and large CBT schools reported a significant difference (more increases and fewer decreases) and/or a significantly larger increase in language arts graduation requirements. Mathematics graduation requirements were reported as having significantly larger increases in CBT schools, anglo CBT schools, and large CBT schools. CBT schools, medium CBT schools, and anglo NCBT schools reported significantly different health and physical education graduation requirements, medium CBT had more increases and decreases, CBT had fewer increases and more decreases, and anglo NCBT schools had more increases and fewer decreases.

CBT schools appeared to be increasing language arts graduation requirements in medium and large suburban anglo schools, and mathematics graduation requirements in anglo schools. CBT schools, and medium CBT schools in particular, were decreasing health and physical education requirements, while anglo NCBT schools were increasing them.

Sub-problem 3, "Was there a difference in the number of courses dropped which were not remedial, summer school, night school, independent study, or advanced placement?" had the following findings related to it.

CBT schools and anglo CBT schools reported a significant difference (more decreases and fewer increases) and/or significantly larger decreases in art courses dropped. CBT schools reported significantly different (similar increases, more decreases) and significantly larger decreases in health and physical education courses dropped. Suburban CBT schools reported a significant difference (more increases and no decreases) in the number of social studies courses dropped. Rural CBT schools reported a significant difference (smaller increases and more decreases) in the total number of courses dropped. Large CBT schools reported a significant difference (similar increases and more decreases) and significantly more decreases in foreign language courses dropped. Anglo and large

CBT schools reported significantly larger decreases in mathematics courses dropped.

CBT schools appear to have decreased the art, foreign language, health and physical education, and to a certain extent mathematics and social studies courses more than NCBT schools.

Sub-problem 4, "Was there a difference in the number of courses added which were not remedial, summer school, night school, independent study, or advanced placement?" had no significant findings related to it.

Sub-problem 5, "Was there a difference in the number of remedial courses offered?" had the following findings related to it.

CBT, rural CBT, anglo CBT, and medium city CBT schools reported significantly larger increases or significant differences (more increases and fewer decreases) in remedial mathematics course offerings. Rural CBT schools reported significantly more increases in total remedial courses. Rural and medium CBT and urban NCBT schools reported significantly more increases in summer school remedial courses.

Sub-problem 6, "Was there a difference in the number of advanced placement courses offered?" had the following findings related to it.

CBT schools, large CBT schools, and anglo CBT schools reported significantly more increases in advanced placement foreign language courses.

Sub-problem 7, "Was there a difference in the number of independent study courses offered?" had the following findings related to it.

Large NCBT schools reported significantly more increases in total independent study courses. Anglo NCBT schools reported significantly more increases in art independent study courses. Rural CBT schools reported significantly larger increases in foreign language independent study courses.

Sub-problem 8, "Was there a difference in the number of summer school courses offered which were not remedial, advanced placement, or independent study?" had the following findings related to it.

CBT schools reported significantly more increases, and urban CBT schools reported significant differences in summer school language arts courses, with more increases and fewer (no) decreases. Urban CBT schools reported significantly larger decreases in summer school foreign languages. Suburban NCBT schools reported significantly larger decreases in summer school mathematics courses. Urban NCBT schools reported significantly larger increases in summer school practical arts courses.

Sub-problem 9, "Was there a difference in the number of night school courses offered which were not remedial, advanced placement, or independent study?" had no significant findings related to it.

Sub-problem 10, "Was there a difference in the number of courses which had changed duration?" had no significant findings related to it.

Sub-problem 11, "Was there a difference in the number of courses which had combined with another course or separated into two courses?" had no significant findings related to it.

Sub-problem 12, "Was there a difference in the number of courses that, while retaining the same title and length, had substantially changed in content, organization, or instructional approach?" had no significant findings related to it.

Sub-problem 13, "Was there a difference in the number of sequences of courses?" had the following findings related to it.

Rural NCBT schools reported significantly more increases in tracking, or sequences of courses.

Sub-problem 14, "Was there a difference in the number of courses offered only in alternate years or semesters or in one section?" had the following findings related to it.

Small and medium CBT schools and rural CBT schools reported significantly more increases in courses offered in alternate years. Medium CBT and rural CBT schools reported significantly more increases in courses offered in alternate semesters. Suburban NCBT schools reported significantly more increases in courses offered only in one section.

Sub-problem 15, "Was there a difference in average and minimum class size?" had the following findings related to it.

NCBT schools, large NCBT schools, and anglo NCBT schools reported significantly larger increases and a significant difference (more increases and more decreases) in average class size. Large NCBT schools reported significantly larger increases and a significant difference (more increases and fewer decreases) in minimum class size.

Sub-problem 16, "Was there a difference in student enrollment data?" had the following findings related to it.

Large NCBT schools and minority NCBT schools reported a significant difference (more increases and more decreases) and/or significantly larger increases in classes taken per student per year. Rural NCBT schools reported significant differences (more increases and more decreases) in credits taken per student per year in foreign languages.

Sub-problem 17, "Was there a difference in staffing?" had the following findings related to it.

Large CBT schools reported significantly more decreases in total full-time equivalency teachers. Large NCBT schools, and NCBT schools in general, reported significantly more decreases in full-time equivalency foreign language teachers. Medium CBT schools reported significantly more decreases in full-time equivalency art teachers. CBT schools and medium CBT schools reported significantly more decreases and a significant difference (more increases and more decreases) in full-time health and physical education full-time equivalencies. Medium CBT schools reported a significant difference (fewer increases and more decreases) and significantly larger decreases in full-time equivalency practical arts teachers. Medium city NCBT schools reported significantly different (more increases and fewer decreases) music teacher full-time equivalencies. NCBT schools, anglo CBT schools, small CBT schools, and rural CBT schools reported significant differences (more increases and fewer decreases) in pupil-principal ratios. Rural CBT schools and small CBT schools reported significant differences (more increases and fewer decreases) in pupil-assistant principal ratios. Large NCBT schools reported significantly different (more increases and more decreases) pupil-staff and pupil-teacher ratios. Minority NCBT, medium CBT,

urban CBT, and small NCBT schools reported significantly different pupil-teacher ratios--more decreases and fewer increases.

Generally, CBT schools were decreasing numbers of staff and ratios at a larger rate than NCBT schools. Medium CBT schools appear to be cutting electives, such as art, health and physical education, and practical arts. Small and rural schools reported the largest decreases in ratios, especially all principals and counselors. Large, small, and minority NCBT schools were also reporting these major decreases.

Summary of Major Trends

The summary of major trends is organized into 17 sections formed by the sub-problems of the study.

Sub-problem 1, "Was there a difference in the number of credits offered?" had the following major trends related to it.

All schools were increasing the numbers of credits offered in all subjects. Smallest increases were noted in foreign languages and humanities. Suburban and medium city schools and medium size schools demonstrated the most increases.

Rural and minority schools indicated decreasing social studies credits offerings. Art credits were decreasing in urban schools. Medium city schools reported decreases in music offerings. Large and minority schools posted decreases in foreign language offerings.

Notable increases were found in medium schools in foreign languages. Practical arts was the most popular of the elective courses. Urban CBT, suburban CBT, medium NCBT, and rural CBT schools were generally increasing offerings more than their counterparts.

Schools reporting a high degree of no change were the rural schools. The schools most likely to report change were suburban and medium city schools.

Overall, the trend was to increase credits offered, with art, music, foreign languages, and humanities netting decreases, or very small increases. Social studies in some areas was not reported as increasing much. Practical arts was the most popular of the electives, and the four "basic" areas were the most likely to be reported increasing. There seemed to be no particular trend for any type of school to report any broad increases more than any other type.

Sub-problem 2, "Was there a difference in the graduation requirements?" had the following major trends related to it.

The strongest trend observed was to increase graduation requirements in the "basic" subjects--language arts, science, mathematics, and social studies. Total graduation requirements, health and physical education graduation requirements, and practical arts graduation requirements were also likely to be reported as increasing. CBT schools, except in the rural areas, reported more increases in the "basic" subjects. Small and medium CBT schools reported more increases than their NCBT counterparts. Anglo CBT schools reported more increases in the basics, and anglo NCBT schools reported more increases in the electives. CBT schools were more likely to report increases in the minority category.

Generally, there was a trend for CBT schools to increase graduation requirements more especially in the "basics."

Sub-problem 3, "Was there a difference in the number of courses dropped which were not remedial, summer school, night school, independent study, or advanced placement?" had the following major trends related to it.

Overall, there was little tendency to change the number of courses dropped. Schools were dropping in total courses, and language arts courses. Small and medium CBT schools and both CBT and NCBT large schools reported increases in courses dropped. Medium schools and suburban schools were most likely to report decreases in courses dropped.

Sub-problem 4, "Was there a difference in the number of courses added which were not remedial, summer school, night school, independent study, or advanced placement?" had the following major trends related to it.

The major trend was to add courses in the "basics." All types of schools reported increases in elective courses as well, the smallest increases being reported in foreign languages and humanities. Medium CBT and minority CBT schools reported the most increases over their counterparts. The rest of the schools reported similar increases.

Sub-problem 5, "Was there a difference in the number of remedial courses offered?" had the following major trends related to it.

Remedial courses appeared only in the "basic" subjects, and in summer school and night school. Remedial courses offered during the regular school day were also in the "basics." Anglo CBT schools, medium CBT schools, medium city CBT schools, rural CBT schools, and urban and suburban NCBT schools reported more increases in remediation than did their counterparts. Especially in suburban schools, there was some indication of remedial practical arts courses.

Sub-problem 6, "Was there a difference in the number of advanced placement courses offered?" had the following major trends related to it.

Advanced placement courses were seldom offered, and when offered, only appeared during the regular school year. If advanced placement courses were added, they were added in the four "basic" subjects. Foreign language advanced placement courses were the only electives to be mentioned, and they were found most frequently in urban and suburban schools.

Sub-problem 7, "Was there a difference in the number of independent study courses offered?" had the following major trends related to it.

The trend was to add independent study courses, although they were not frequently offered. Independent study courses were less commonly found than advanced placement courses. Those schools that offered independent study courses indicated the most increases in the four "basic" subjects.

Sub-problem 8, "Was there a difference in the number of summer school courses offered which were not remedial, advanced placement, or independent study?" had the following major trends related to it.

The trend was to add summer school courses, most frequently in language arts, science, mathematics, and social studies. It was most frequently found in schools of medium size, and in urban and suburban schools. CBT schools most frequently reported increases in summer school courses.

Sub-problem 9, "Was there a difference in the number of night

school courses offered which were not remedial, advanced placement, or independent study?" had the following major trends related to it.

The trend was to increase night school courses in the "basic" subjects, and to a lesser extent, practical arts courses. There were fewer decreases reported in night school than in summer school. NCBT schools reported more increases in urban and medium cities. CBT schools reported more increases in suburban and rural settings.

Sub-problem 10, "Was there a difference in the number of courses which had changed in duration?" had the following major trends related to it.

The trend was to increase the number of courses extended or reduced in length, with extending the length of courses much the more popular choice. In analysis by community type, extending courses was favored by NCBT schools, but in analysis by school size, CBT schools reported more increases. When analyzed by ethnic makeup, it was found that CBT schools utilized the option more in anglo schools, and NCBT schools utilized it more in minority schools. Overall, there appeared to be no distinct trend for one type of school to favor the option.

Sub-problem 11, "Was there a difference in the number of courses which had combined with another course or separated into two courses?" had the following major trends related to it.

The trend was to report increases in courses combined or separated. Combining courses was the more popular option. Separating a course into two courses was more popular as school size decreased. NCBT schools favored combining courses in small and medium schools, and CBT favored it in large schools. Separation of courses was favored by NCBT schools in medium and large schools, and by CBT schools in small schools. Anglo schools chose combining courses more often than minority schools. CBT schools reported more increases in both combining and separating courses in minority schools, but in anglo schools, there was no clear trend for one type of school to choose either combining courses or separating courses. Overall, there was no distinct trend for any type of school to report one option before the other.

Sub-problem 12, "Was there a difference in the number of courses that, while retaining the same title and length, had substantially changed in content, organization, or instructional approach?" had the following major trends related to it.

The major trend was to increase the number of courses changed in content, organization, or instructional approach. Only in analysis by school size was there any clear separation by school type. There, NCBT schools favored reorganization except in medium size schools.

Sub-problem 13, "Was there a difference in the number of sequences of courses?" had the following major trends related to it.

The trend was to increase the numbers of sequences of courses. Sequences of courses were popular in all community types. NCBT schools chose sequences of courses in urban and suburban settings. CBT schools favored sequences of courses in medium city and rural schools. Sequencing courses was favored by CBT schools in all enrollment groups. Sequencing, or tracking, was more likely to be reported as increasing in minority schools, although both ethnic categories reported substantial increases in sequences of courses. Overall, no particular school type favored the trend above the other. It was popular in both.

Sub-problem 14, "Was there a difference in the number of courses offered only in alternate years or semesters or in one section?" had the following major trends related to it.

The trend was to increase the numbers of courses offered in alternate years or alternate semesters, or in one section. Urban CBT schools, suburban NCBT schools, medium city CBT and NCBT schools, small NCBT schools, large CBT schools, and anglo schools preferred one-section courses to courses offered in alternate semesters or years. Rural CBT schools, small CBT schools, and large NCBT schools chose alternate year courses more frequently. Large NCBT schools and small CBT schools also liked alternate semesters. Medium schools, and CBT schools in general were more likely to report larger increases in all three areas than any other type or size of school.

Sub-problem 15, "Was there a difference in average and minimum class size?" had the following trends related to it.

The trend was to decrease both average and minimum class sizes. NCBT schools reported more increases and more decreases in both average and minimum class sizes than CBT schools. In rural communities and small schools, both average and minimum class sizes were reported as decreasing, with few reported increases. Average class size was reported as increasing more and decreasing more than minimum class size. Anglo schools reported more increases and decreases than minority schools in average class size. This was also true of urban NCBT schools to urban CBT schools. Suburban NCBT schools reported fewer decreases than CBT schools, but the decreases were more than the increases. Medium city schools reported the largest difference between increases and decreases in average class size. Medium city CBT schools reported fewer increases and more decreases in average class size than NCBT medium city schools. Large schools reported fewer decreases in average and minimum class sizes. Anglo CBT schools increased more and decreased less in average class size than anglo NCBT schools.

Class sizes, while generally on the decrease, seem to get smaller as the school size and community type got smaller. Medium city, suburban, and medium size schools demonstrate the variability associated with the diversity of their situations. Some reported increases, some reported decreases, but few remained the same. Urban, large, and minority schools reported the smallest reductions, and anglo schools, because of their diversity, reported larger increases and decreases.

Sub-problem 16, "Was there a difference in student enrollment data?" had the following major trends related to it.

The trend was to increase the number of classes taken per student per year in total, and in the subject areas. All community types, school sizes, and ethnic categories reported more credits taken per student per year, except in foreign languages. Largest increases were reported in language arts, science, mathematics, social studies, and practical arts. In most cases NCBT schools' students were reported as taking more classes than their CBT counterparts. NCBT schools also reported smaller decreases in credits taken per student per year. Decreases in credits taken per student per year by

department were most likely to be reported in small and medium schools. NCBT schools reported more increases and fewer decreases in suburban and rural schools. CBT schools reported more increases and fewer decreases in urban and medium city schools. The course most likely to be reported as increasing was mathematics. If there is any summary, it is that, again, students were taking more classes, notably in the basic subjects, especially mathematics, and in functional subjects, namely practical arts. No particular consistent trend other than that could be ascertained.

Sub-problem 17, "Was there a difference in staffing?" had the following major trends related to it.

The major trend was to decrease total full-time equivalencies. In addition, the trend was to decrease full-time equivalencies in social studies, foreign languages, and all electives, and to increase them in mathematics except in NCBT minority schools. CBT schools reported more increases and fewer decreases in full-time equivalencies, especially in suburban schools. Rural and small schools reported more decreases and more increases in full-time equivalencies. Small schools, followed by large schools, reported the most decreases in full-time equivalencies. Medium CBT schools were increasing full-time equivalencies less and decreasing them more. Large CBT schools reported decreasing full-time equivalencies more than NCBT schools. In minority schools, NCBT schools showed more increases in teachers in all subjects. In anglo schools, CBT showed more gains and fewer losses in full-time equivalencies.

The trend was to increase staff members in total, and principals, counselors, and teachers, and to decrease media personnel. The trend was also to decrease all pupil-professional staff ratios. Many schools did not have media personnel, librarians, and assistants to the principal, hence their ratios were stable with regard to no change reported. There appeared to be no particular trend for either CBT schools or NCBT schools in any analysis to exhibit a strong trend to alter ratios differently than the other.

Hence, actual staff numbers generally increased, but there were reported decreases in full-time equivalencies in total and certain elective subjects. The trend was also to decrease ratios. Large

and small schools, and their urban and rural counterparts displayed the largest decreases in staff. There was no particular trend for one type of school to consistently report a difference.

Conclusions

The following conclusions are based upon the findings and major trends of this study. Again, they apply only to stable enrollment high schools.

1. Competency-Based Testing has had limited impact on curricula in North Central public senior high schools. More significant than any differences between Competency-Based Testing and Non-Competency-Based Testing high schools curricula were the changes both types of schools were going through.

2. Competency-Based Testing was not a broad-based educational trend. Despite national publicity, and much public pressure, few schools embraced CBT as a solution to educational ills. That fact combined with the myriad of implementation methods left a very diversified movement with little or no commonality.

3. The general trend, regardless of type of school, was to increase emphasis on the "basics" and reduce emphasis on the elective subjects, especially foreign language, art, music, and humanities. Functional electives, primarily practical arts, were emphasized.

4. Summer school, night school, advanced placement, and independent study were not being used to solve educational problems. When they were used, they were primarily for basic courses and remediation, where applicable. On the other hand, all curricular options such as increasing or decreasing the length of courses, offering courses in one section, and tracking were reported as common ways of dealing with curricular problems.

5. Students were consistently reported as taking more classes, yet the full-time equivalencies were reported as decreasing and the pupil-staff ratios decreasing. Furthermore, schools reported increasing course offerings, courses added, and graduation requirements, as well as night school, summer school, advanced placement, and independent study courses. These courses were also subject to internal change, and other curricular transformations. The evidence

indicated more courses being taught, in all likelihood, and more preparations and involvement in curricular revision for teachers. Teachers were being asked to teach more times during the day and times during the year than they had been previously.

6. It was apparent that CBT schools were doing certain things differently than NCBT schools. They focused their energies on the "basics," primarily language arts and mathematics in all areas, night school, summer school, independent study, advanced placement, and remediation. As a consequence, the electives suffered. Fewer were added, more dropped, and less pressure was placed or opportunity given for students to take electives. While both types of school were doing this, CBT schools, as a general rule, were doing more of it, some significantly more. Another observation made of CBT schools was that their average and minimum class sizes were decreasing and increasing less. Class sizes were more stable. Despite the fact that enrollment was controlled for in this study, there was less tendency for CBT schools' class sizes to fluctuate as much as NCBT schools'.

7. Any major curricular revisions taking place were occurring in anglo schools, as opposed to minority schools. The analysis proved that the preponderance of significant figures and major trends were found in anglo schools. Minority schools appeared to be making few, if any, curricular changes. What changes were reported were much less strong than anglo schools.

8. The analysis by school size provided more significant differences and more observable trends than any of the other analyses, leading to the conclusion that there is more variation related to size of school than other traits. It also showed that the majority of the curricular revision taking place was in medium and large schools, rather than small schools. This analysis also showed that the majority of the curricular revision was taking place in large and medium size CBT schools. In combination with the observation from Number 7, it is apparent that these were medium and large anglo CBT schools.

9. The analysis by community types demonstrated that the rural school was the most common type to exhibit significant curricular

change, especially rural CBT schools. Unlike other schools which might have been able to address competency pressures through new or changed courses, rural schools chose remediation, possibly because the small number of students needing help could not justify creation of an entire class. Faced with reduced popularity of certain courses, especially electives, these courses were offered in alternate intervals. Furthermore, reduced emphasis on the electives also meant that what might have been marginally tolerated small classes heretofore were now so small that keeping them and/or their teachers was not feasible; hence, a drastic reduction in teachers, especially in the electives. Fewer teachers with the same number of students in fewer areas resulted in large ratios being reported by principals who thought of "basic" areas, and as declined ratios by principals who thought of elective classes. Because they were often the same schools, these trends were also visible, but to a lesser degree in small schools.

10. While the analysis provided some insight into the operations of certain types of public senior high schools, the instrument was not specific enough in many cases to isolate the type of schools that was exhibiting certain practices. Two examples would be the average class size in anglo schools, and the full-time equivalencies in rural schools. Both of these figures increased more and decreased more (than minority schools, and than urban, suburban, and medium city schools). Obviously there were certain kinds that were reporting only increases. The same was true with anglo schools. There were certain types of anglo schools that were reporting increases and certain types that were reporting decreases. This instrument did not indicate which were increasing and which were decreasing. This researcher tried analysis by combining variables, that is by isolating by ethnic makeup and then analyzing by community type. This analysis, while not reported in this study, proved fruitless. This was primarily due to the extremely small cell size that resulted from multiple analysis. Any significance was necessarily rejected because of the small cell-size phenomenon.

11. Because of the pressure placed upon the basic courses in all areas of the curriculum, that is night school, summer school,

and others, there was a definite narrowing of the curriculum. Hidden in the increases and decreases was the fact that virtually all non-basic areas of study with the partial exceptions of health and physical education and practical arts were receiving reduced attention from schools. The data on the number of courses dropped did not indicate wholesale deletion of specific elective areas or electives in general, but rather by simply not adding courses, by not changing the curriculum in the electives, they were allowed to fade in popularity. The most telling statistic was the classes taken per student per year by department. Increases in students in basics classes had to come from somewhere, even if students were allowed to schedule more than normal class loads. The end result was that fewer and fewer students registered for electives. The tables demonstrated this. There was little, if any, overall increase in electives classes taken. In fact, subtracting the percentage of decreases from the percentage of increases in classes taken per student per year in the electives area was more likely to result in a net decrease in classes taken. Hence, there was inferential evidence that all electives were short-changed, not only by CBT schools, but by all schools in general.

12. It was apparent that despite what critics of American education hypothesized, it is a flexible institution, capable of adjusting to meet the demands of society. The demands that created CBT also created pressure on schools, even if they did not accept Competency-Based Testing. The result of that pressure was evidenced in this study. Schools understood the demands and took steps to meet public expectation without the formalization of Competency-Based Testing. They changed their curricula in a multiplicity of ways to accommodate the demands. Community, district, and state demands may have been different, hence the different programs, but all schools did change.

13. Ultimately, the advocates of Competency-Based Testing did achieve their ends. By eliminating electives, they did reduce the frills courses and the "bad" courses. At the same time, they added remedial courses. By increasing basic skills courses, they improved student skills. Internal changes in courses indicated that examination

of courses took place. With the elimination of electives, the cost of education was reduced, and because education changed, it became more responsive. Programs were implemented, but without the formal sanction of Competency-Based Testing in most cases. The concepts that were expected to be implemented, were.

14. The worst fears of those opposed to CBT were also realized. Many courses and parts of courses were eliminated, especially in social studies, the abstract, the electives, the non-basic, the innovative, the esoteric, and the arts. It did increase the basic, the required, reading and writing, and alternative programs (if they are seen as summer and night school). It did not, however, increase the advanced courses. There was addition of courses, there was dropping of courses, there was destruction of courses outside the basics, there was requirements change, and there was stress on the cognitive. The existing curriculum, while not totally decimated, was observed to reduce education to what some said it did best--teach "readin', 'ritin', and 'rithmetic."

15. While no hard evidence existed other than remarks by some principals indicating that some change was caused by reduced funding, there was, however, sufficient circumstantial evidence to indicate that more factors were in operation on the responses principals gave than just Competency-Based Testing. Some principals also indicated on their questionnaires that the change reflected in their responses was due to declining enrollment (even though there was minimal decline in their population, or even stability). Apparently declining enrollment was actually lack of growth in the minds of many, because they reacted to those situations as if there was actual significant decline. The effect which recent inflation and reduced funding for education have had on education remains to be seen. Some conditions appeared to be the result of funding problems rather than a concern for competency.

16. The tendencies with regard to staffing were complex. As a general rule, the number of full-time equivalencies was being reduced. Not only were students reported as taking more classes, which was reported earlier, but there was reduced participation and offering of electives. Where, then, did the students take their classes?

In all likelihood they were taking them in the "basics" and required areas. Since numbers of teachers in the electives were not reported as being drastically reduced, or more importantly, the teachers in "basic" areas increased, it appears that only one thing could happen, teachers of "basic" classes had inordinately large classes while electives teachers struggled to maintain even minimum class sizes. That could be the explanation for the polar responses in average and minimum class sizes. In order for principals to maintain a skeletal "comprehensive" program, they had to keep some classes and teachers in the electives areas even though student enrollment data did not justify it. Teachers in required areas were making a sacrifice in order to maintain that "comprehensive" program by taking increasingly larger and larger classes.

BIBLIOGRAPHY

Anderson, B. D. & Lesser, P. The costs of legislated minimum competency requirements. Phi Delta Kappan, 1978, 59(9), 606-608.

Bracey, G. W. Some reservations about minimum competency testing. Phi Delta Kappan, 1978, 59(8), 549-552.

Brickell, H. M. Seven key notes on minimal competency testing. Educational Leadership, 1978, 35(7), 551-557. (Also in Phi Delta Kappan, 1978, 59(9), 589-592.)

Cawelti, G. Requiring competencies for graduation--some curricular issues. Educational Leadership, 1977, 35(2), 86-91.

Coombs, J. R. Can minimum competency testing be justified? High School Journal, 1979, 62(4), 175-180.

Ebel, R. L. The case for minimum competency testing. Phi Delta Kappan, 1978, 59(8), 546-549.

Frahm, R. & Covington, J. What's happening in minimum competency testing? Bloomington: Phi Delta Kappa, 1979.

Gilman, D. A. The logic of minimal competency testing. NASSP Bulletin, 1978, 62(419), 56-63.

Glass, G. V. Minimum competence and incompetence in Florida. Phi Delta Kappan, 1978, 59(9), 602-605.

Gorce, Martin J. Subject curriculum modifications occurring in stable enrollment competency-based testing and non-competency-based testing public senior high schools between the school years 1974-75 and 1978-79 (Doctoral dissertation, University of Colorado, 1981).

Hull, H. In defense of "frills." Education Digest, 1979, 45(1), 9-11.

Imhoff, R. F. A. Subject curriculum modifications associated with high schools experiencing declining enrollment (Doctoral dissertation, University of Colorado, 1979).

Jackson, G. B. The research evidence on the effects of grade retention. Review of Educational Research, 1975, 45(4), 613-635.

Jarrett, J. L. I'm for basics but let me define them. Phi Delta Kappan, 1977, 59(4), 235-238.

Kiser, L. L. When mandated courses mandated programs control the curriculum. Educational Leadership, 1977, 35(3), 187-190.

Krajewski, R. Here's how to prepare for the rush toward minimum competency. American School Board Journal, 1979, 166(4), 39-40.

Leininger, E. V. Back to basics: underlying concepts and controversy. Elementary School Journal, 1979, 79(3), 167-173.

Lewis, D. M. Testing and its legal limits--the Florida decision. Today's Education, 1979a, 68(4), 25-28.

McClung, M. S. Are competency testing programs fair? Legal? Phi Delta Kappan, 1978, 59(6), 397-400.

Mecklenburger, J. Minimum competency testing: the bad penny again. Phi Delta Kappan, 1978, 59(10), 697-699.

Nathan, J. & Jennings, W. Educational bait-and-switch. Phi Delta Kappan, 1978, 59(9), 621-625.

Parnell, D. The case for competency-based education. Bloomington: Phi Delta Kappa, 1978.

Pipho, C. Minimum competency testing in 1978: a look at state standards. Phi Delta Kappan, 1978, 59(9), 585-588.

Spady, W. G. Competency-based education: a bandwagon in search of a definition. Educational Researcher, 1977, 6(1), 9-14.

Taylor, B. L. Will the Oregon graduation requirements law set new directions for the nation's secondary schools? North Central Association Quarterly, 1976, 50(3), 321-327.

Wise, A. E. Minimum competency testing: another case of hyper-rationalization. Phi Delta Kappan, 1978, 59(9), 596-598.

APPENDICES

APPENDIX A: FORM A

			_____ Public _____ Non-public	_____ 10 _____ 7 _____ 11 _____ 8 _____ 12 _____ 9 _____ Total
Address (including City, State and Zip Code)	Name of High School	District Name/Address	(Check One)	Pupil membership in grades included in this report as of Oct. 1)

Form A School Year ____ - ____

ANNUAL REPORT
NORTH CENTRAL ASSOCIATION OF COLLEGES
AND SCHOOLS

(Please submit in typewritten form)

Return this blank to your State NCA Office by November 1. The Association is under no obligation to consider a school for continued membership unless this report is properly completed and filed. In completing the report, use data as of October 1, and refer to the Policies and Standards for Secondary Schools.

_____ ( ) _____
(Name of Principal) (Print or type) Telephone No.

_____ ( ) _____
(Name of Superintendent) (Print or type) Telephone No.

1. INSTITUTIONAL PURPOSE (Standard 1)
Does your school have a written statement of its philosophy and purposes? Yes _____ No _____
When was this statement last reviewed? _____

2. PROGRAM OF STUDIES (Standards 2.70 and 3.10 - 3.20)
Indicate the number of units of credit in each of the following fields being offered and taught in grades 9 through 12 in the school in this current school year.

3.31 Language Arts	____	3.36 Art	____
3.32 Science	____	3.39 Music	____
3.33 Mathematics	____	3.30 Humanities	____
3.34 Social Studies	____	3.37 Practical Arts	____
3.35 Foreign Languages	____	3.38 Health & P.E.	____

Others (Please specify) _____

_____

_____

_____

Total _____

A school may offer subjects in alternate years. If you do this, list the subjects by years in the space below, recurring those subjects not being taught this present year.

_____

_____

_____

_____

What is the number of units of credit in 9-12 required for graduation? (Standard 2.70) _____

3. PUPIL-PROFESSIONAL STAFF RATIO (Standard 4.60)
In calculating full-time equivalency for the superintendent, assistant superintendent, and special supervisors, estimate the percent of time spent in grades included in this report. Be certain to compute full-time equivalency for every other position noted below.

Position	Number of Persons	Full-time Equivalency
Superintendent		
Asst. Superintendent		
Special Supervisors		
Principal		
Asst. or Vice-Principals		
Adm. Assistants to Principal		
Librarians		
Media Specialists		
Guidance & Counseling		(1)
Teachers		
Total Professional Staff		(2)

Pupil-Professional Staff Ratio: _____
(Compute by dividing the total full-time equivalency of the professional staff - line 2 above - into the total number of students reported under "Pupil Membership".)

4. GUIDANCE SERVICES (Standard 4.70 and 4.4-4.7)

Pupil-Counselor Ratio: _____
(Compute by dividing the total full-time equivalency of guidance counselors - line (1) above - into the total number of students reported under "Pupil Membership".)

Are all guidance personnel fully qualified? Yes _____ No _____

NOTES
(1) If your answer to NO to any question on this form, excepting 7b, include a letter of explanation.
(2) Insert in this packet a copy of the daily schedule of the school, noting the names of all professional staff personnel, including principal, guidance counselors, librarians, etc., and any other relevant information that would assist reviewers in interpreting the school program.
(3) Make certain to complete the next page.
(4) The principal must complete Sections I and II on the last page, indicating the disposition of last year's violations.

5. INSTRUCTIONAL MEDIA PROGRAM (Standards 6.71 and 6.7)
Total full time equivalency of Professional Media Personnel, including librarians: _____
Does the media staff at least one qualified librarian on a half-time basis (at minimum)? Yes ___ No ___

6. MEDIA PROGRAM EXPENDITURES (Standard 6.4)
Including books, magazines and A.V. materials exclusive of textbooks

Media Program Expenditure last year	Enrollment last year	Per Pupil Expenditure last year

7. MEDIA COLLECTION AND QUARTERS (Standard 6.1 and 6.2)

a. Number of student seats in library and adjacent areas	Enrollment	Per Cent of Enrollment which can be seated

b. Is library or MC room used regularly as a study hall? Yes _____ No _____
(If yes, attach note of explanation inside this report.)

c. Total number of books in library: _____

8. SPECIAL PROGRAMS

	Yes	No	No. Pupils
a. Does the adult diploma completion program in your school meet all NCA requirements? (2.11)			
b. Does the summer school program conducted by your school meet all NCA requirements? (2.71)			

9. OTHER IMPORTANT DATA
a. How many days were classes actually in session last school year? (2.61) _____
b. What is the length of the school day (exclusive of lunch)? (2.62) _____
c. Number of students attending vocational or other schools on a shared time basis: _____ on a full time basis _____
(Please include a letter of explanation identifying school(s) and giving details.)

10. SUBMISSION OF REPORT
a. Date report was submitted to the State NCA Office: _____
b. Date report was received by the State NCA Office _____

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APPENDIX B: CURRICULUM SURVEY GENERAL INFORMATION

Code Number _____

Leave Blank

CURRICULUM SURVEY

General Information

Instructions: Please respond with your opinions to the following questions in the spaces provided.

1. In what type of community is your school? Check one.
   - A. Inner City: in the central portion of a city with a population greater than 150,000._____
   - B. Rest of Big City: within the city limits of a city with a population greater than 150,000 but not in the inner city._____
   - C. Suburban Fringe: within the residential area of a city with a population greater than 150,000 but not in the city limits._____
   - D. Affluent Suburb: within the city limits or residential area served by a city with a population greater than 150,000._____
   - E. Medium City: in a county with a population less than 150,000 or in a county having a city with a population of at least 25,000._____
   - F. Small City: in a community having a population of between 3500 and 25,000._____
   - G. Rural: in a community having a population less than 3500._____

2. What was the ethnic makeup of your school's student body in 1978-79?
   - A. Anglo_____% C. Hispanic_____% E. Native American_____%
   - B. Black_____% D. Asian_____% F. Other_____% (specify: ____)

3. Did the ethnic makeup of your school change between 1974-75 and 1978-79? Yes_____ No_____
   If it changed, what were the percentages in 1974-75?
   - A. Anglo_____% C. Hispanic_____% E. Native American_____%
   - B. Black_____% D. Asian_____% F. Other_____% (specify: ____)

4. What percent of the following occupational categories were found in your attendance area in 1978-79?
   - A. Farming/Ranching_____% D. Business/Managerial_____%
   - B. Blue collar/Unskilled_____% E. College educated/Professional_____%
   - C. White collar/Skilled_____% F. Unemployed_____%

5. Were the major occupational categories different in 1974-75? Yes_____ No_____ If changed, what were the percentages in 1974-75?
   - A. Farming/Ranching_____% D. Business/Managerial_____%
   - B. Blue collar/Unskilled_____% E. College educated/Professional_____%
   - C. White collar/Skilled_____% F. Unemployed_____%

6. Did your school (or state/district) require some form of test to be taken by all students to assure that each graduate was minimally competent in some specified skills in 1974-75? Yes_____ No_____

7. Was a minimal competency test required for graduation in 1978-79? Yes_____ No_____

8. What type of school is yours? Public_____ Private/Parochial/Vocational_____

9. What was your total enrollment for 1974-75?_____ 1978-79?_____

Code Number _____

CURRICULUM SURVEY

Instructions: Based on your understanding of your building's situation, please circle either I, SI, NC, SD, D, or NA for each of the following statements. You are to interpret whether the changes are strong, slight, not changed, or not applicable. **This instrument asks for your perceptions, and not actual numbers.** Please read the entire questionnaire before beginning.

I = Increased	SD = Slightly Decreased
SI = Slightly Increased	D = Decreased
NC = No Change	NA = Not Applicable

Leave Blank

For each response, consider a comparison of the numbers from 1974-75 to 1978-79.

1. The credits required for graduation in grades 9-12, total	I	SI	NC	SD	D	NA	_____
in the subject areas ... Language Arts	I	SI	NC	SD	D	NA	_____
Science	I	SI	NC	SD	D	NA	_____
Math	I	SI	NC	SD	D	NA	_____
Social Studies	I	SI	NC	SD	D	NA	_____
Foreign Language	I	SI	NC	SD	D	NA	_____
Art	I	SI	NC	SD	D	NA	_____
Music	I	SI	NC	SD	D	NA	_____
Humanities	I	SI	NC	SD	D	NA	_____
Practical Arts	I	SI	NC	SD	D	NA	_____
Health/P.E.	I	SI	NC	SD	D	NA	_____
Other	I	SI	NC	SD	D	NA	_____
2. The courses that were dropped excluding remedial, advanced placement, night school, summer school, or independent study courses, total	I	SI	NC	SD	D	NA	_____
in the subject areas ... Language Arts	I	SI	NC	SD	D	NA	_____
Science	I	SI	NC	SD	D	NA	_____
Math	I	SI	NC	SD	D	NA	_____
Social Studies	I	SI	NC	SD	D	NA	_____
Foreign Language	I	SI	NC	SD	D	NA	_____
Art	I	SI	NC	SD	D	NA	_____
Music	I	SI	NC	SD	D	NA	_____
Humanities	I	SI	NC	SD	D	NA	_____
Practical Arts	I	SI	NC	SD	D	NA	_____
Health/P.E.	I	SI	NC	SD	D	NA	_____
Other	I	SI	NC	SD	D	NA	_____
3. The courses that were added excluding remedial, advanced placement, night school, summer school, or independent study courses, total	I	SI	NC	SD	D	NA	_____
in the subject areas ... Language Arts	I	SI	NC	SD	D	NA	_____
Science	I	SI	NC	SD	D	NA	_____
Math	I	SI	NC	SD	D	NA	_____
Social Studies	I	SI	NC	SD	D	NA	_____
Foreign Language	I	SI	NC	SD	D	NA	_____
Art	I	SI	NC	SD	D	NA	_____
Music	I	SI	NC	SD	D	NA	_____
Humanities	I	SI	NC	SD	D	NA	_____
Practical Arts	I	SI	NC	SD	D	NA	_____
Health/P.E.	I	SI	NC	SD	D	NA	_____
Other	I	SI	NC	SD	D	NA	_____

1.

Code Number

4. **Remedial courses**	total	SI	NC	SD	D	NA	
in summer school	total	SI	NC	SD	D	NA	
in night school	total	SI	NC	SD	D	NA	
in the subject areas	Language Arts	SI	NC	SD	D	NA	
	Science	SI	NC	SD	D	NA	
	Math	SI	NC	SD	D	NA	
	Social Studies	SI	NC	SD	D	NA	
	Foreign Language	SI	NC	SD	D	NA	
	Art	SI	NC	SD	D	NA	
	Music	SI	NC	SD	D	NA	
	Humanities	SI	NC	SD	D	NA	
	Practical Arts	SI	NC	SD	D	NA	
	Health/P.E.	SI	NC	SD	D	NA	
	Other	SI	NC	SD	D	NA	
5. **Advanced placement courses**	total	SI	NC	SD	D	NA	
in summer school	total	SI	NC	SD	D	NA	
in night school	total	SI	NC	SD	D	NA	
in the subject areas	Language Arts	SI	NC	SD	D	NA	
	Science	SI	NC	SD	D	NA	
	Math	SI	NC	SD	D	NA	
	Social Studies	SI	NC	SD	D	NA	
	Foreign Language	SI	NC	SD	D	NA	
	Art	SI	NC	SD	D	NA	
	Music	SI	NC	SD	D	NA	
	Humanities	SI	NC	SD	D	NA	
	Practical Arts	SI	NC	SD	D	NA	
	Health/P.E.	SI	NC	SD	D	NA	
	Other	SI	NC	SD	D	NA	
6. **Independent study courses**	total	SI	NC	SD	D	NA	
in summer school	total	SI	NC	SD	D	NA	
in night school	total	SI	NC	SD	D	NA	
in the subject areas	Language Arts	SI	NC	SD	D	NA	
	Science	SI	NC	SD	D	NA	
	Math	SI	NC	SD	D	NA	
	Social Studies	SI	NC	SD	D	NA	
	Foreign Language	SI	NC	SD	D	NA	
	Art	SI	NC	SD	D	NA	
	Music	SI	NC	SD	D	NA	
	Humanities	SI	NC	SD	D	NA	
	Practical Arts	SI	NC	SD	D	NA	
	Health/P.E.	SI	NC	SD	D	NA	
	Other	SI	NC	SD	D	NA	
7. **Summer school** courses excluding remedial, advanced placement, and independent study	total	SI	NC	SD	D	NA	
in the subject areas	Language Arts	SI	NC	SD	D	NA	
	Science	SI	NC	SD	D	NA	
	Math	SI	NC	SD	D	NA	
	Social Studies	SI	NC	SD	D	NA	
	Foreign Language	SI	NC	SD	D	NA	
	Art	SI	NC	SD	D	NA	
	Music	SI	NC	SD	D	NA	
	Humanities	SI	NC	SD	D	NA	
	Practical Arts	SI	NC	SD	D	NA	
	Health/P.E.	SI	NC	SD	D	NA	
	Other	SI	NC	SD	D	NA	

3. Code Number

8. Night school courses excluding remedial, advanced placement, and independent study ..... total	SI	NC	SD	D	NA	
in the subject areas ..... Language Arts	SI	NC	SD	D	NA	
Science	SI	NC	SD	D	NA	
Math	SI	NC	SD	D	NA	
Social Studies	SI	NC	SD	D	NA	
Foreign Language	SI	NC	SD	D	NA	
Art	SI	NC	SD	D	NA	
Music	SI	NC	SD	D	NA	
Humanities	SI	NC	SD	D	NA	
Practical Arts	SI	NC	SD	D	NA	
Health/P.E.	SI	NC	SD	D	NA	
Other	SI	NC	SD	D	NA	
9. Courses extended in length (i.e. mini to quarter, quarter to semester, semester to year)	SI	NC	SD	D	NA	
10. Courses reduced in length (i.e. year to semester, semester to quarter, quarter to mini)	SI	NC	SD	D	NA	
11. Courses combined with another course(s) to make one single course	SI	NC	SD	D	NA	
12. Courses separated into two or more distinct courses	SI	NC	SD	D	NA	
13. Courses that, while retaining the same title and length, have been substantially changed in content, organization, or instructional approach	SI	NC	SD	D	NA	
14. Subject curriculum tracks or sequences of courses (i.e. business, engineering, science, vocational, art)	SI	NC	SD	D	NA	
15. Courses offered only in alternate years	SI	NC	SD	D	NA	
16. Courses offered only in alternate semesters	SI	NC	SD	D	NA	
17. Courses offered only in one section	SI	NC	SD	D	NA	
18. The average class size	SI	NC	SD	D	NA	
19. The minimum class size	SI	NC	SD	D	NA	
20. The average number of credits taken per student per year	SI	NC	SD	D	NA	
21. The average number of credits taken per student per year in the subject areas ..... Language Arts	SI	NC	SD	D	NA	
Science	SI	NC	SD	D	NA	
Math	SI	NC	SD	D	NA	
Social Studies	SI	NC	SD	D	NA	
Foreign Language	SI	NC	SD	D	NA	
Art	SI	NC	SD	D	NA	
Music	SI	NC	SD	D	NA	
Humanities	SI	NC	SD	D	NA	
Practical Arts	SI	NC	SD	D	NA	
Health/P.E.	SI	NC	SD	D	NA	
Other	SI	NC	SD	D	NA	
22. The full-time equivalency teachers ..... total	SI	NC	SD	D	NA	
in the subject areas ..... Language Arts	SI	NC	SD	D	NA	
Science	SI	NC	SD	D	NA	
Math	SI	NC	SD	D	NA	
Social Studies	SI	NC	SD	D	NA	
Foreign Language	SI	NC	SD	D	NA	
Art	SI	NC	SD	D	NA	
Music	SI	NC	SD	D	NA	
Humanities	SI	NC	SD	D	NA	
Practical Arts	SI	NC	SD	D	NA	
Health/P.E.	SI	NC	SD	D	NA	
Other	SI	NC	SD	D	NA	

Code Number _____

23. **Other changes** in the subject curriculum not mentioned:

RESULTS

☐ Please check if you desire a summary of the results of this project.

Comments:

Use the remainder of this page for any comments about this survey, or for any information you wish to add.

APPENDIX C: HYPOTHESES OF STUDY

Sub-problem 1: Was there a difference in the number of credits offered?

Hypothesis 1: There was no significant difference in the total number of credits offered.

Hypothesis 2: There was no significant difference in the number of language arts credits offered.

Hypothesis 3: There was no significant difference in the number of science credits offered.

Hypothesis 4: There was no significant difference in the number of mathematics credits offered.

Hypothesis 5: There was no significant difference in the number of social studies credits offered.

Hypothesis 6: There was no significant difference in the number of foreign language credits offered.

Hypothesis 7: There was no significant difference in the number of art credits offered.

Hypothesis 8: There was no significant difference in the number of music credits offered.

Hypothesis 9: There was no significant difference in the number of humanities credits offered.

Hypothesis 10: There was no significant difference in the number of practical arts credits offered.

Hypothesis 11: There was no significant difference in the number of health and physical education credits offered.

Sub-problem 2: Was there a difference in the graduation requirements?

Hypothesis 12: There was no significant difference in the number of credits required for graduation.

Hypothesis 13: There was no significant difference in the subject areas required for graduation.

Hypothesis 14: There was no significant difference in increase or decrease in the number of credits required for graduation in the subject areas and in total.

Sub-problem 3: Was there a difference in the number of courses dropped which were not remedial, summer school, night school, independent study, or advanced placement?

Hypothesis 15: There was no significant difference in increase or decrease in the number of courses dropped in the subject areas and in total.

Sub-problem 4: Was there a difference in the number of courses added which were not remedial, summer school, night school, independent study, or advanced placement?

Hypothesis 16: There was no significant difference in increase or decrease in the number of courses added in the subject areas and in total.

Sub-problem 5: Was there a difference in the number of remedial courses offered?

Hypothesis 17: There was no significant difference in increase or decrease in the number of remedial courses offered in summer school, night school the subject areas, and in total.

Sub-problem 6: Was there a difference in the number of advanced placement courses offered?

Hypothesis 18: There was no significant difference in increase or decrease in the number of advanced placement courses offered in summer school, night school, the subject areas, and in total.

Sub-problem 7: Was there a difference in the number of independent study courses offered?

Hypothesis 19: There was no significant difference in increase or decrease in the number of independent study courses offered in summer school, night school, the subject areas, and in total.

Sub-problem 8: Was there a difference in the number of summer school courses offered which were not remedial, advanced placement, or independent study?

Hypothesis 20: There was no significant difference in increase or decrease in the number of summer school courses in the subject areas and in total.

Sub-problem 9: Was there a difference in the number of night school courses offered which were not remedial, advanced placement, or independent study?

Hypothesis 21: There was no significant difference in increase or decrease in the number of night school courses in the subject areas and in total.

Sub-problem 10: Was there a difference in the number of courses which had changed duration?

Hypothesis 22: There was no significant difference in increase or decrease in the number of courses that had been extended or reduced in length.

Sub-problem 11: Was there a difference in the number of courses which had combined with another course or separated into two courses?

Hypothesis 23: There was no significant difference in increase or decrease in the number of courses combined with another course or separated into two courses.

Sub-problem 12: Was there a difference in the number of courses that, while retaining the same title and length, had substantially changed in content, organization, or instructional approach?

Hypothesis 24: There was no significant difference in increase or decrease in the number of courses that, while retaining the same title and length, had substantially changed in content, organization, or instructional approach.

Sub-problem 13: Was there a difference in the number of sequences of courses?

Hypothesis 25: There was no significant difference in increase or decrease in the number of sequences of courses.

Sub-problem 14: Was there a difference in the number of courses offered only in alternate years or semesters or in one section?

Hypothesis 26: There was no significant difference in increase or decrease in the number of courses offered only in alternate years or semesters or in one section.

Sub-problem 15: Was there a difference in average and minimum class size?

Hypothesis 27: There was no significant difference in increase or decrease in the average class size.

Hypothesis 28: There was no significant difference in increase or decrease in the minimum class size.

Sub-problem 16: Was there a difference in student enrollment data?

Hypothesis 29: There was no significant difference in increase or decrease in the average number of classes taken per student per year.

Hypothesis 30: There was no significant difference in increase or decrease in the average number of classes taken per student per year by department.

Sub-problem 17: Was there a difference in staffing?

Hypothesis 31: There was no significant difference in increase or decrease in the number of teachers in the subject areas and in total.

Hypothesis 32: There was no significant difference in the pupil-professional staff ratio or an increase or decrease thereof.

Hypothesis 33: There was no significant difference in the pupil-counselor ratio or an increase or decrease thereof.

Hypothesis 34: There was no significant difference in the pupil-professional media personnel ratio or an increase or decrease thereof.

Hypothesis 35: There was no significant difference in the pupil-librarian ratio or an increase or decrease thereof.

Hypothesis 36: There was no significant difference in the pupil-principals ratio or an increase or decrease thereof.

Hypothesis 37: There was no significant difference in the pupil-classroom teacher ratio or an increase or decrease thereof.